

Attorney Docket No. SIC-04-010

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of:

TORU IWAI, et al

Application No.: 10/710,355

Filed: July 2, 2004

For: BICYCLE DISK BRAKE APPARATUS
WITH LAMINATED COMPONENTS

Examiner: Bradley T. King

Art Unit: 3657

REPLY BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Commissioner:

This is a reply brief for the above-captioned matter.

The Examiner's Answer states, at page 8, lines 10-11, that nothing in the original disclosure indicates that the fasteners prevent delamination of the rotor members. To the contrary, the last sentence of paragraph [0025] of the specification states: "Also, the method of fixing rotor member 22b to hub mounting member 22a prevents rotor members 91 from separating from rotor member 90." As shown in Fig. 7, rotor member 90 is sandwiched between a pair of outer rotor members, both labeled 91. Clearly, separation of either one of the outer rotor members 91 from the middle rotor member 90 would constitute delamination. Furthermore, as disclosed, either a fixing pin 22c (Fig. 7) or a hexagonal bolt 122c (Fig. 9) is used to fix rotor member 22b to hub mounting member 22a. Since no other structure is disclosed for fixing rotor member 22b to hub mounting member 22a in the two embodiments, clearly fixing pin 22c and hexagonal bolt 122c each prevent rotor members 91 from separating (delaminating) from rotor member 90.

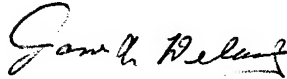
As for the “compressive force” feature, as noted in Appellant’s brief, this language was added after multiple attempts to counter the Examiner’s assertion (exemplified at page 9 of the Examiner’s Answer, for example) that Otomo’s fasteners would exert force should any delamination of Otomo’s layers occur. As stated by the Examiner: “Forces that resist movement of the rotors away from each other are necessarily oriented in a direction forcing the rotors toward each other.” In other words, reactive forces that occur in response to any delamination “press” the delaminated components back toward each other. While the Appellant believes that such an interpretation is unreasonable (reactive forces do not *press components toward each other*), the “compressive force” feature was previously added in a constructive attempt to clarify that an active force that creates a net bias or tightening of the components toward each other *to prevent delamination* is intended, not a simple reactive force that occurs *after* delamination.

The embodiment shown in Fig. 7 supports the “compressive force” feature because fixing pin 22c is a press-deformed rivet, and such rivets provide a compressive force. The embodiment shown in Fig. 9 especially supports the “compressive force” feature because fixing pin 122c is a hexagonal bolt. Bolts provide compressive forces. The Examiner’s Answer sets forth a hypothetical “floating rotor” that is loosely coupled to the hub using bolts with threadless shank portions. Such a structure is absurd. Nobody wants a rotor that flops around when the brakes are applied. In addition to uncontrollable vibration during brake application, the fasteners would be sheared off in short time. Even a lay person would recognize the undesirability of such an unsafe structure, let alone one of ordinary skill in the art. While it is known to use floating *calipers* to apply a braking force to a stationary rotor, floating rotors make no sense, and no evidence was provided that such structures have ever existed. The same is true for the alleged use of cooperating jam nuts to bolt components together. No evidence has been provided that such a structure has ever been used to bolt a rotor to a hub. The natural teaching of the embodiment shown in Fig. 9 is a bolt 122c that tightens the components together using a compressive force.

The remaining arguments made at pages 9-11 of the Examiner’s Answer have been properly addressed in Appellant’s brief. Again, each of Otomo’s collars (7) extends from the external side surface of one second rotor member (2) to the opposite external side surface of the other second rotor member (2). As a result, all pressing forces of fastener (9) are communicated through collar

(7), so rotor members (1) and (2) are not pressed towards each other with a compressive force by the fastener and the hub mounting member.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "James A. Deland".

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